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Total Number of Pages : 02

B.Tech
PBT5J001

5th Semester Regular / Back Examination 2018-19
IMMUNOLOGY & IMMUNOTECHNOLOGY

BRANCH : BIOTECH

Time : 3 Hours

Max Marks : 100

Q.CODE : E208

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- What is acquired immunity? Discuss with examples.
- What are helper T cells?
- What is adjuvant, and write its function?
- What is haptan, a superantigen?
- Distinguish between primary and secondary immune response.
- What is myeloid dendritic cell ? Write its role.
- What are cytokines and what role do they play in the immune response?
- Write the role of NK cells in protecting the host.
- Distinguish between isotype and idiotype.
- What is epitope?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any EIGHT out of TWELVE) (6 x 8)

- How monoclonal antibody can be produced? State its major applications.
- Discuss the structure and role of T cells in immune responses.
- What are MHC molecules? Discuss their role in antigen presentation.
- What are interleukins? How do they help the helper T cells in performing their function?
- What do you understand by self tolerance and autoimmunity? Discuss their role in autoimmune diseases.
- Describe the process of cross-presentation. Which cell types are most likely to be involved in cross-presentation, and what unique role does this process play in the activation of naïve CD8⁺ T cells?
- How does histamine suppress its own release?
- Write the molecular mechanism of activation of complement system.
- Describe the major differences between inactivated and attenuated vaccines. What are the advantages and disadvantages of genetically engineered vaccines?
- What are B-cell antigen receptors, and how are they involved in B-cell activation?
- Write the biological significance of cluster of differentiation molecules (CDs).
- What are defensins? How do they function?

Part-III

Long Answer Type Questions (Answer Any TWO out of FOUR)

- Q3** How can antibodies be engineered through genetic manipulations? Discuss the cloning of genes for Fv, Fab, Fc and scFv. How can these genes be used to obtain functional antibody fragments? **(16)**
- Q4** Describe the salient features of the different type of human immunoglobulins, giving details of heavy and light chains. **(16)**
- Q5** What is hypersensitivity? Write its type. Discuss the mechanism of type I hypersensitivity reactions and how these can lead to systemic and localized anaphylaxis. **(16)**
- Q6** Discuss in brief about gene shuffling and molecular basis of antibody diversity including combinatorial joining of Vj and C regions of a chromosome. **(16)**